

NASA TECH BRIEF

John F. Kennedy Space Center



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A Tool for Cutting Ultra Thin Slits in Metals

The problem:

In general, narrow slits are made in metals by an electric discharge machining (EDM) process. The minimum width of EDM produced slits is 0.002 in (0.051 mm). However, to minimize the material waste and to improve precision, slit sizes should be reduced by additional orders of magnitude.

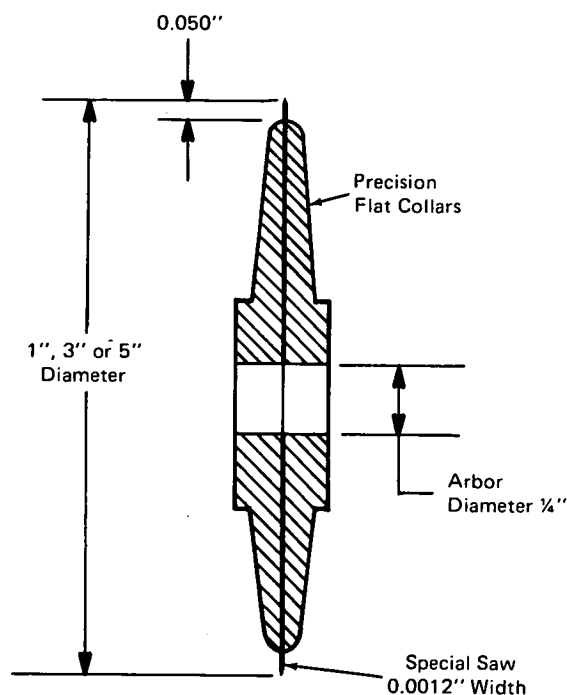
The solution:

A slitter was developed which can economically produce slits of 0.0012-in (0.0305-mm) widths in materials up to RC 50 hardness.

How it's done:

The slitter shown in the figure uses an ultra-thin, 0.0012-in (0.0305-mm), saw which has 78 teeth per inch with negative rake to withstand the cutting pressure. The saw is made of super finished M2 tool steel and mounted in a precision holder of up to 0.050-in (1.27-mm) cutter depth. Used with a ¼-in (6-mm) arbor, the tool is available in 1-, 3-, and 5-in (2.5-, 7.5-, and 12.5-cm, respectively) diameters. The tool operates with cutting speeds under 20 surface feet per minute (6 meters/minute) and uses a special lubricant such as beeswax.

The tool may be used for general cutting of metal and for producing simulated cracks in metal samples that are used in fatigue tests.



Patent status:

No patent action is contemplated by NASA.

Note:

Requests for further information may be directed to:
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Kennedy Space Center
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